

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



1  
EX 892 EX

EXTENSION SERVICE

# REVIEW

U.S. DEPARTMENT OF AGRICULTURE \* NOV. DEC. 1973

44/11-12



*The Extension Service Review is for Extension educators—in County, State, and Federal Extension agencies—who work directly or indirectly to help people learn how to use the newest findings in agriculture and home economics research to bring about a more abundant life for themselves and their communities.*

*The Review offers Extension workers, in their roles as educational leaders, professional guideposts, new routes and tools for speedier, more successful endeavor. Through this exchange of methods tried and found successful by Extension agents, the Review serves as a source of ideas and useful information on how to reach people and thus help them utilize more fully their own resources, to farm more efficiently, and to make the home and community a better place to live.*

**EARL L. BUTZ**  
*Secretary of Agriculture*

**EDWIN L. KIRBY**, *Administrator*  
*Extension Service*

Prepared in  
Information Services  
Extension Service, USDA  
Washington, D. C. 20250

**Director: Walter John**  
**Editor: Mary Ann Wamsley**

The Secretary of Agriculture has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through July 1, 1978.

The Review is issued free by law to workers engaged in Extension activities. Others may obtain copies from the Superintendent of Documents, Government Printing Office, Washington, D. C., 20402, at 30 cents per copy or by subscription at \$2.50 a year, domestic, and \$3.25, foreign.

Reference to commercial products and services is made with the understanding that no discrimination is intended and no endorsement by the Department of Agriculture is implied.

## EXTENSION SERVICE

# REVIEW

*Official monthly publication of Cooperative Extension Service; U. S. Department of Agriculture and State Land-Grant Colleges and Universities cooperating.*

## CONTENTS

	Page
Professional improvement opportunities	3
Harnessing 'cow power'	8
Computer calculates cows' rations	10
Meat science made practical	12
River rafts open new world to 4-H'ers	14
The fuel and the spark	16

## Changes Are Coming

With this, the last issue of the Review for 1973, we close out more than just another year. This issue is the last to be produced under the excellent guidance of Walter John, who has been Director of Information for Extension Service-USDA for the last 9 years. He is retiring as of December 31, after nearly 40 years in information work with four USDA agencies.

We shall miss his good counsel and his strong support for keeping the magazine relevant to its major audience, county Extension workers. And we are sure that readers will miss his editorial observations, which have appeared regularly on the back cover of the Review for the last year.

Replacing Walter John's name on the masthead at left will be that of Ovid Bay, who has been appointed acting director of information. He has been information program leader for agriculture and natural resources on the ES-USDA staff for 2 years.

Finally, your editor will be taking 4 months of maternity leave beginning the middle of January. Please continue to submit your ideas for articles—the staff members who will be taking over in the meantime will welcome your suggestions.—MAW

# Professional improvement opportunities

## Western CRD Workshop

The fourth Western Regional Community Resource Development Workshop will be held June 11-21, 1974, at Colorado State University. Participants from throughout the United States and from abroad are welcome.

The workshop is based on the assumption that the greatest help the CRD professional can provide communities is to facilitate citizen involvement in decisions and action toward their perceived goals. Its objective, therefore, is to enhance participants' understanding of the supporting, helping role essential to developing effective community decisionmaking.

The workshop will be flexibly structured to allow maximum opportunity for mutual help on individual and group concerns and pursuits.

Specific objectives for the workshop are to provide participants an opportunity:

- to develop a working knowledge of some basic concepts underlying locally motivated planning and organization for identifying and working on significant CRD problems, and of their implications for the professional CRD worker;

- to increase skill in using this knowledge in working with actual CRD planning groups; and

- to deepen personal commitment to the facilitating, guiding role in working with people on their concerns.

Details about registration fees and accommodation rates will be announced later. For more information, contact Dr. Donald M. Sorenson, Workshop Coordinator, Department of Economics, Colorado State University, Fort Collins, Colorado 80521, telephone 303/491-5394. □

## Missouri CRD Shortcourse

The seventh annual Community Development Summer Course and Workshop will be May 19-31, sponsored by the University of Missouri-Columbia. Theme will be "The Application of Community Development Theory in Practice."

The program will be in a retreat setting at the Metropolitan St. Louis YMCA's conference center, Trout Lodge, near Potosi, Missouri.

The University of Missouri Department of Regional and Community Affairs invites the participation of professionals in community development, planning, and related fields, who are interested in application of the community development process. The course is noncredit and participation is limited to 40 persons.

For additional information, contact Donald Littrell, Director, Summer Course and Workshop, Department of Regional and Community Affairs, University of Missouri, 723 Clark Hall, Columbia, Missouri 65201. □



## University of Chicago

Extension workers interested in the planning, administration, and evaluation of adult education programs in a multi-institutional urban environment are invited to apply for admission and financial assistance at the University of Chicago.

As an urban private institution, the University of Chicago provides a unique opportunity for Extension workers to learn about adult education work at private colleges and universities, public schools, community colleges, health and welfare organizations, and other agencies, institutions, and organizations outside of the land-grant system.

The M.A. and Ph.D. degrees and the Certificate of Advanced Study are offered in adult education. In addition to their work in adult education, students may elect to concentrate on the study of administration, agricultural economics, anthropology, sociology, or any other social science. Through the C.I.C. program, students may arrange to take courses at any of the Big Ten universities as an integral part of their doctoral program.

Because the adult education graduate students at the University of Chicago come from a variety of adult education institutions, the informal learning opportunities provided by the Journal Club, seminars, and other student-managed activities facilitate the development of a practical understanding of the competing and complementary roles of the diverse institutions engaged in conducting adult education programs.

Fellowships, scholarships, and assistantships are available on a competitive basis. Special internships may also be arranged for students desiring

practical experience in various adult education institutions.

To obtain applications for admission and financial aid, to request detailed information on the graduate programs, and to get advice concerning your graduate study plans and problems, write to William S. Griffith, Chairman, Adult Education Special Field, University of Chicago, 5835 South Kimbark Avenue, Chicago, Illinois 60637. Applications for fellowships and scholarships for the 1973-74 academic year must be submitted by February 1, 1974. ☐

## University of Maryland

One graduate assistantship in the Department of Agricultural and Extension Education is available to Extension workers interested in pursuing the M.S. or Ph.D. degree in Extension and Continuing Education.

Additional assistantships may become available. Assistantships are for 12 months and pay \$3,480, plus remission of fees which amount to \$1,416.

Contact Dr. E. R. Ryden, Department of Agricultural and Extension Education, University of Maryland, College Park, Maryland 20742. ☐

---

## Harvard Fellowships for Government Careers

### Littauer Fellowships

These fellowships are for public servants who have had considerable experience in government, and preferably some graduate study in the social sciences, and who plan definitely to continue their careers in government service, at either the Federal, State, or local level.

Students in the School pursue individual programs of study. These may be concentrated in one of the social sciences, particularly economics or political science, or they may combine two or more fields in a manner suited to specific needs.

The fellowships are adjusted in amount to the needs of the student and may normally carry stipends up to a maximum of \$6,800. Exceptions may be made at the discretion of the Fellowship Committee. ☐

### Administration Fellowships

These fellowships are for recent college graduates who have had some experience in the public service and a distinguished record in their undergraduate work. A limited number of these fellowships are also available to recent college graduates without government experience who intend to enter the public service. Administration Fellowships carry stipends up to \$5,400 with amounts adjusted to the needs of the student.

Persons interested in fellowships or admission may obtain application blanks, catalogs, and other information by writing to Harry Weiner, Assistant Dean, Kennedy School of Government, Littauer Center, Harvard University, Cambridge, Massachusetts 02138. Applications should be filed by February 15. ☐

## IFYE

The IFYE Alumni Fellowship, now known as the International Four-H Youth Exchange Fellowship, will be offered for the fourth time beginning in August 1974. This is an 18-month fellowship which offers an opportunity for graduate work in the Washington, D.C., area, as well as an opportunity to work half-time for the IFYE Association of the U.S.A.

The fellowship is paid by the IFYE Association of the U.S.A. and the National 4-H Foundation. Responsibilities include editing and publishing the IFYE News four times a year; maintenance of all permanent records of the Association; promotion of membership and involvement in the Association; assistance to Association officers in the execution of their duties; assistance with national IFYE conferences and with the National 4-H Foundation's international programs; as well as serving as a liaison between New Zealand and the national association concerning the 1977 World IFYE Conference.

Those interested in applying should write to: IFYE Association of the U.S.A., International Division, National 4-H Foundation, 7100 Connecticut Avenue, Washington, D.C. 20015. Applications should be in the hands of the Association by February 15, 1974. □

## Warner Scholarship

Mu Chapter of Epsilon Sigma Phi will award one scholarship of \$100 to professionals in Extension Service for study of Extension methods through one of several ways—a 3-week summer or winter Extension school, academic study while on the job, or study leave.

Applications may be obtained from the State Extension training officer, or from the Staff Development Office, Extension Service, USDA, Washington, D.C. 20250. The deadline for filing applications is April 30, 1974.

Announcement of the recipient will be made in May; the award will be granted after the study is completed.

□

## Cornell University

The Department of Rural Sociology provides Extension, research, and teaching assistantships paying \$3,720 annually plus payment of fees and

waiver of tuition. These grants are available only to graduate students majoring in development sociology who are full candidates for a degree.

For further information, contact Dr. Harold R. Capener, Head, Department of Rural Sociology, New York State College of Agriculture, Cornell University, Ithaca, New York 14850. □

---

## Florida State University Graduate Programs in Adult Education

Florida State University conducts a graduate program in adult education that may be of interest to many Cooperative Extension personnel. This program is available to degree and non-degree students and can lead to master's, advanced master's, and/or doctoral degrees.

Although no rigid curriculum is prescribed, students pursue a core of studies in adult education, educational foundations (philosophy, psychology, and sociology of education), and the social sciences.

In addition, students can design a program of studies focusing on one or more specialized areas such as community development, program development and evaluation, management and administration, adult basic education, and others.

University fellowships and a number of assistantships are available, but vary from year to year, depending on the nature of the projects being undertaken by faculty and students.

Past projects have included technical assistance and materials preparation for public schools; adult basic and migrant education programs; training of educational leadership for the aged, for State agencies, for surgeons, and for health-related professionals; workshops for correctional education instructional staff; evalua-

tion of statewide adult education programs; and consultation services to other colleges and universities.

In addition, a limited number of internships have been made available with the following agencies: Federal Correctional Institution, State Department of Education, Florida Board of Regents, Florida State University Division of Continuing Education, Tallahassee Memorial Hospital Family Physicians Training Program, and others.

Admission applications for the graduate program should be submitted at least 6 weeks prior to the expected enrollment date.

Applications for fellowship awards are needed by early February for the following academic year. Assistantship applications are accepted at any time, but early spring is preferred.

These awards range from \$200 to \$400 per month, depending on student experience, the nature of the award, and funds available.

Additional information about this program can be obtained from Dr. Irwin R. Jahns, Associate Professor and Graduate Coordinator, Adult Education Program, Division of Educational Management Systems, Florida State University, Tallahassee, Florida 32306. □



## Carver Fellowship

The University of Missouri College of Agriculture offers a 2-year George Washington Carver Fellowship for outstanding graduate students in an area of study and research supervised by a department within the College of Agriculture.

Stipends for a Master of Science candidate are \$4,400 for the first year, and \$4,600 for the second year, and are renewable. The Fellowship is designed for promising young scientists who will bring distinction to the Missouri Agricultural Experiment Station with research and contributions as members of the research staff.

For further information and an application, write to: University of Missouri, Dean, College of Agriculture, 2-69 Agriculture Building, Columbia, Missouri 65201. □

## Hatch Fellowship

The William H. Hatch Fellowship offered by the University of Missouri Agricultural Experiment Station is for candidates for the Ph.D. degree. This distinguished fellowship honoring the author of the Agricultural Experiment Station legislation which is widely known as the "Hatch Act" carries a stipend of \$5,000 the first year, and \$5,200 the second year. There is no restriction on the area of study and research except that it must be supervised by a department within the College of Agriculture. The candidate may choose his department.

The effective date of this fellowship is July 1; however, applications must be submitted for consideration prior to January 10, 1974, as the recipient will be announced on February 15 or soon after. The Dean of the College of Agriculture is in charge of selection.

A copy of the brochure and an application may be obtained from the Dean of the College of Agriculture, 2-69 Agriculture Building, Columbia, Missouri 65201. □

## University of Vermont

One graduate research fellowship is available in the Department of Vocational Education and Technology for workers interested in pursuing a master's degree in Extension education. The fellowship pays the full \$2,400 out-of-state tuition plus a \$3,100 salary on an 11-month basis.

Contact Dr. Gerald R. Fuller, VOTEC Department, Agricultural Engineering Building, University of Vermont, Burlington, Vermont 05401. □

## Tyson Fellowship

The Woman's National Farm and Garden Association offers a \$500 Sarah Bradley Tyson Memorial Fellowship for a woman who wishes to do advanced study in agriculture, horticulture, or "related professions," including home economics.

Applications should be made by April 15, 1974, to Mrs. J. W. Gerity, Box A, York Harbor, Maine 03911. □

## Farm Foundation Fellowships

The Farm Foundation offers fellowships to agricultural Extension workers, giving priority to administrators, including directors, assistant directors, and supervisors. County agents, home economics agents, 4-H workers, and specialists also will be considered. Staff members of the State Extension Services and USDA are eligible.

Courses of study may be one quarter, one semester, or 9 months. The amount of the grant will be determined individually on the basis of period of study and need for financial assistance. Maximum grant will be \$4,000 for 9 months' training.

## University of Wisconsin

The University of Wisconsin-Madison offers a limited number of assistantships through the Division of Program and Staff Development, University Extension, consisting of \$343 per month for 12 months, plus a waiver of out-of-state tuition. Contact Patrick G. Boyle, Director, Division of Program and Staff Development, 432 North Lake Street, Madison, Wisconsin 53706. □

## Behavioral Sciences

The Center for Advanced Study in the Behavioral Sciences provides scholars free time (at their normal university salary) to devote to their own study and to associate with colleagues in the same or related disciplines. The Center requests nominations from certain graduate departments and research centers. Fields: the behavioral sciences. Write to the Director, Center for Advanced Study in the Behavioral Sciences, 202 Junipero Serra Boulevard, Stanford, California 94305. □

It is suggested that study center on the social sciences and in courses dealing with educational administration and methodology. Emphasis should be on agricultural economics, rural sociology, psychology, political science, and agricultural geography.

Applications are made through State Directors of Extension to Dr. R. J. Hildreth, Managing Director, Farm Foundation, 600 South Michigan Avenue, Chicago, Illinois 60605. Forms are available from State Extension Directors. Applications must reach the Farm Foundation by March 1. □



## Electrical Women's Round Table, Inc.

The Electrical Women's Round Table, Inc., an organization for women in the electrical industry, annually offers a grant of \$1,500, the Julia Kiene Fellowship, to a woman for graduate study in electrical living and allied fields.

Graduating seniors and women with degrees from accredited institutions are eligible to apply. Applications are judged on the basis of scholarship, character, financial need, and professional interest in electrical living. Study is toward advanced degrees in such fields as advertising, education,

electric utilities, electrical engineering, electric home equipment manufacturing, Extension, housing, journalism, radio-television, and research.

The college or university selected by the recipient must be accredited and approved by the EWRT Fellowship Committee. Completed applications must be in by March 1.

For application forms and further information, write to Miss Lois Dencke, Chairman, EWRT Fellowship Committee, 900 Moreau Drive, Lincoln University, Jefferson City, Missouri 65101. □

## Ohio State University

The Ohio State University offers research associateships of \$3,600 to \$5,400 and a number of university fellowships on a competitive basis, about \$2,400 each. All associateships and fellowships include waiver of fees.

Application deadline for university fellowships is February 1. Associateships may be applied for at any time. Contact Dr. C. J. Cunningham, Department of Agricultural Education, 2120 Fyffe Road, The Ohio State University, Columbus, Ohio 43210. □

## 4-H Agents

The National Association of Extension 4-H Agents will award a minimum of ten \$100 scholarships to 4-H agents who are members of the association. The scholarships may be used for summer school, travel study, and independent study or a full-year degree program. The only requirement for application is that a professional agent must have been an Extension Service youth worker and a member of NAEA for at least 2 years.

One of the 10 scholarships administered by NAEA is the \$100 Rockford Map Publishers Scholarship. This scholarship is limited to the States of Minnesota, Indiana, Wisconsin, Ohio,

West Virginia, Michigan, Illinois, and Pennsylvania.

Application forms may be obtained by contracting Nancy B. McKinney, Box 607, Litchfield, Connecticut 06759, or by contacting the Professional Improvement Committee Chairman of your State 4-H agents association. Application deadline is May 1. □

## Washington State

The Edward E. Graff Educational Grant of \$1,500 is for study of 4-H Club work in the State of Washington. Applications are due April 1. Contact Tom Trail, Associate Professor of Extension Education, Room

323, Agricultural Sciences II, Washington State University, Pullman, Washington 99163. □

## N.C. Summer School

The North Carolina State University 3-week summer session will be held June 10-28, 1974. Plans call for offering 3-hour courses in Administration of Cooperative Education, Adult Basic Education, Community College Teaching, Evaluation of Adult Education Programs, Extension and Public Service Function in Higher Adult Education, Modern Practices of Adult Education, Teaching Disadvantaged Adults, Family Economics, Current Trends in Foods and Nutrition, Horse Management, Residential Landscaping, Plant Disease Control, and Soil Fertility.

Address Dr. W. L. Gragg, Department of Adult and Community College Education, North Carolina State University, Box 5504, Raleigh, North Carolina 27607. □

## Colorado Summer School

The National Extension Summer School at Colorado State University is being planned for June 10-21, 1974. For further information about the program, contact Dr. James M. Kincaid, Jr., Director, National Extension Summer School, Room 213 Liberal Arts, Colorado State University, Fort Collins, Colorado 80521. □

# Harnessing 'cow power'

by  
Donald A. Harter  
*Area Resource Development Agent  
Pennsylvania Extension Service*  
and  
Donald L. Nelson  
*Program Leader  
Rural Development Information  
Extension Service-USDA*

---

**Editor's Note:** *USDA recently announced a \$59,610 grant to Tennessee State University, Nashville, for a year's study of ways to convert agricultural solid wastes to methane gas and sludge. The Environmental Protection Agency is cooperating. In addition, Extension Service-USDA will sponsor a seminar in January on the feasibility of methane gas production from wastes on poultry farms.*

---

A potential source of energy—crop and animal wastes—exists on nearly all farms. With the current energy crisis, production of fuel from these wastes may not be too far-fetched.

But where would you start if you wanted to educate farmers about the energy-producing potential of agricultural wastes?

Two field agents from Lebanon County, Pennsylvania, decided to start by using the time-proven Extension demonstration method to show how bacterial decomposition can be used to convert animal waste into methane gas for farm fuel.

The idea had its origin at an Extension





sion committee meeting of agent and specialist personnel held for the purpose of coming up with environmental exhibits for 1973 Ag Progress Days.

This annual event, one of the largest outdoor educational activities in the East, is sponsored by Pennsylvania's Cooperative Extension Service.

In 1973 it was held in the south-central area of the State, in the home territory of Lebanon County Agent Glenn Miller, Assistant County Agent Newton Bair, and Don Harter, Area Resource Development Agent and chairman of the Environmental Committee for the event.

Several committee members pointed out that in comparison with the successful experiences in countries such as India, which has more than 2,500 anaerobic digestors for producing methane gas from agricultural wastes, there has been little application of this process in the United States. Methane can be used for heating, lighting, or for powering gas engines.

While the idea is not new, little attention has been given to the possibilities of producing this fuel. It has about two-thirds the calorific value of natural gas and burns relatively pollution-free.

The organic waste from 100,000 cattle has the potential of supplying the natural gas needs of 30,000 people, even though most United States researchers thus far have claimed that the economics of the process is highly marginal.

Committee member Roger Grout, agricultural engineering specialist, emphasized, however, that "the economy factor appears to be rapidly diminishing in importance in view of the energy crisis, our concern for a cleaner environment, and our need for supplemental sources of fuel at a time of scarcity. This could be an idea whose time has come."

*Lebanon County Extension Agent Newton Bair, at left, demonstrates his garden tractor, which is powered by methane gas generated from decomposing cow manure.*

Further discussion centered on the critical need to inform farmers of this bacterial process and to evaluate their attitudes about it.

Specifically, the committee agreed that an attempt should be made to build a demonstration model digester and then get verbal and written feedback from farmers on this question: Do you feel that the concept of methane production for farm use is worthy of further research and development?

Harter obtained a how-to-do-it manual from the Gobar Gas Research Station in Ajitmal, (U.P.) India, and a literature search provided information on research in the United States. At this point, Miller and Bair took over.

Using these research findings, the pair built a 30-gallon capacity digester which use a mixture of cow manure and water. The mixture is heated to about 90 degrees.

For three sweltering hot days farmers flocked around the demonstration, looking and listening intently as the three Extension workers explained the how and why of the exhibit. The visitors often brushed by gleaming farm equipment displays and beckoning cold drink stands to try to find the "manure machine."

Bair started and restarted his "cow-powered" garden tractor while telling the large crowds that the residue remaining after gas production does not lose any of its fertilizing value for crops.

Miller lit a gas mantle light from the methane gas produced and fried eggs on a methane gas burner. They distributed literature and told fascinated farmers how the generator was built and how it works.

Of the farmers who filled out comment cards at the exhibit, 98 percent indicated that this synthetic fuel concept was worthy of further research.

"With today's energy crisis," said one farmer, "it is my opinion that any research into the possibilities of utilizing organic sources as fuel is a must!"

"I would cooperate with any research idea that is practical to develop this kind of energy conversion sys-

tem," said another.

Others advised that funds should be made available for further tests and experiments.

Extensive coverage was given to the demonstration by regional and State news media. It also was highlighted in articles carried by several national publications. A request has been received from a major television network to use a videotape of the demonstration, and the organizers of the weeklong 1974 Pennsylvania Farm Show want the demonstration presented there.

An inter-college meeting was convened recently by Dr. Milford Heddleson, Coordinator of Environmental Affairs at Penn State, to evaluate the interest shown during the event as well as the numerous communications subsequently received from people throughout the United States.

Participants agreed to ask Dr. James Beattie, Dean of the College of Agriculture, to appoint a faculty committee to study the feasibility of developing a research proposal and to explore sources of funding support.

Another important outcome was a reinforcement of the conviction that county staff can make creative educational contributions in non-traditional roles if given a challenge which is perceived as meaningful.

In one sense, being involved with research was not a new experience for Miller and Bair, since they previously had assisted with such activities as off-station research plots.

But as Miller notes, "before starting the project we had some real misgivings about whether we were capable of playing a significant role in helping to identify environmental research needs. Our experience at least seems to indicate that the answer to that concern is a definite yes."

Extension's strength in the past has been its ability to adapt program approaches to meet the real needs of people. Indeed, increased use of non-traditional approaches may help county staffs become more effective in responding to challenges such as the energy crisis. □



At the University of Michigan in Ann Arbor, they used to refer to Michigan State University (just down the road at East Lansing) as "Cow College" and "Moo U."

But guess who's planning meals for the "moo-cows" these days?

For thousands of dairymen in Michigan and elsewhere, it's a computer named "Synthia"—at the University of Michigan. She helps them determine least-cost rations for their herds. She does it through a direct connection with the "Telplan" computerized management program of MSU's Cooperative Extension Service.

Synthia, the computer, has a memory bank stuffed with current data about feedstuffs such as nutritional and energy values, protein content, and local and current prices. Input was prepared by Jim Schoonaert, Ingham County Extension agricultural agent; Steve Harsh, agricultural economist; and Don Hillman, dairy specialist.

The dairyman runs down a checklist at the county Extension office, telling Synthia vital statistics about his herd. This might include the type of feed being used, how often the herd is fed, amount and quality of milk produced, and other statistics about the cows.

The computer then figures the cheapest and most efficient feed for that particular herd.

Synthia responds to 41 different programs ranging from tax information to crop planting and livestock feeding—and can even advise on life insurance needs. Harsh currently heads up the overall Michigan program.

Agent Schoonaert premiered the computer service for least-cost rations at his Ingham County office.

Response was excellent, and savings to dairymen were even better.

"Some dairymen recover their costs in less than a day," reports Schoonaert.

He currently has 24 dairymen paying \$5 a year for a touchtone phone in the county Extension office which is hooked directly to the computer in

Ann Arbor (about 65 miles away). They pay another 20 cents a minute to use the phone. Average least-cost ration call is 20 to 25 minutes. Cost—another \$4 or \$5.

One of the best payoffs came to Bob Hayhoe, Onondaga dairyman. The computer told him to increase his protein by adding 40 pounds a day of soybean oil meal.

The soy cost \$2.20 a day for his 38-cow herd. But milk production jumped 150 pounds a day (worth

about \$9). Bob gained \$6.80 a day. Over a month, that's \$180 more profit, even if you subtract the cost of hauling the extra milk.

To prove the payoff of the least-cost ration, Schoonaert put 48 dairymen on the program for a year free of charge. (Costs were picked up by the W. K. Kellogg Foundation.)

The dairymen were randomly selected by Schoonaert to represent three herd sizes. A letter was sent to each dairyman stipulating that he must



*Above is a telephone computer typical of those in Michigan Extension offices. First, the agent helps the farmer prepare an input-output form (beside phone) for his dairy ration program. After having dialed the computer, County Agent Schoonaert, right, feeds through a series of coded cards to retrieve specific ration recommendations.*

## Computer calculates cows' rations

by  
Ken Fettig  
Publications Editor  
Department of Information Services  
Michigan State University

come to the county Extension office for an explanation of the program.

"This meeting usually lasts about an hour," Schoonaert says. "After looking at the dairyman's rations, we would run a basic analysis and give him three or four alternatives.

"You have to get on a one-to-one basis to really be effective," Schoonaert emphasized. "Farmers are often too proud to be real honest in a large group—they won't tell you if the quality of their hay is poor. But on a one-to-one basis, you can take a look at a sample of the farmer's roughage and talk frankly with him."

After the initial visit in the Extension office, a 15-minute phone call is all that is needed to update the ration. Schoonaert recommends that this be done at least twice a year, or whenever the roughage program changes—usually in the fall when corn silage becomes the basic feed and in June when haylage or green-chop is fed.

In the initial analysis of the 48 operations Schoonaert figured potential savings in feed cost would average 12 cents per cow per day and range from 1 cent per cow per day to 61 cents.

In other words, a dairyman with 80 cows, saving the average of 12 cents per cow per day, would recover the cost of the computer charge (\$5) and the phone call (\$4 to \$5) in a single day.

Farmers using the computerized least-cost ration saved money because they found that they were feeding protein supplements that were too expensive, or they were feeding low producers too well.

Only one of Schoonaert's dairymen was feeding too much protein. The computer showed Lynwood Nims, that he was wasting time and money by topdressing soybean oil meal when he already was feeding a 17-percent grain ration. That saved him \$6 a day with his 35-cow herd.

Besides saving feed money, 18 of Schoonaert's 48 dairymen increased herd production by more than 190 pounds per day.

"Cows produce best when they get a good balance of protein and energy," says Schoonaert. "Milk production in one 85-cow herd had dropped to 2,750 pounds a day because the ration was out of balance. The computer showed the dairyman that he should cut his high moisture corn level almost in half, because he was feeding too much energy.

"It also showed him that he should increase the protein in his parlor feed. As a result, he increased his herd production from 2,750 to 3,400 pounds in less than 10 days."

Schoonaert advises his dairymen to rebalance their rations whenever they have a change in the kind or quality of roughage. Another time to check

the ration is when prices change on feed inputs—a substitute might offer a less expensive feed.

The ration also should be checked when there is a substantial change in production. Fresh cows will need more protein and energy to kick out that extra milk. And when there is an unusual decline in production, the computer can figure out why.

After the year's "free trial," which included as many as six analyses during the year for some of the dairymen, Schoonaert told them that anyone who wanted to continue on the program had to pay his own way. Half of them are now doing just that. And some of the rest will be using the program in the next year.

Schoonaert has concluded that dairymen really appreciate programs like Telplan. "It's tough to balance a ration with pad and pencil, and next to impossible to keep it economical, too," he says.

Dairymen trust computers. Forty-seven of the 48 participants said men might make mistakes, but computers never do.

"No doubt about it," says Schoonaert, "a dairyman will adopt a computerized least-cost dairy ration program when he can see its potential payoff and how easy it is to use.

"The program fits all dairymen; the smaller ones might just take a little longer to recover their \$10 investment. I think that's a pretty inexpensive 'insurance policy' for better production and feeding efficiency."

Other States also are making use of Synthia. Most combine campus hookups (at the land-grant university) and field terminals to make the computer as accessible as possible. The number of terminals in each State varies—Michigan has the most by far with 40.

Other States with from one to several direct hookups with Synthia are Illinois, Wisconsin, Indiana, Ohio, Minnesota, New York, Iowa, Kansas, North Carolina, North Dakota, South Dakota, Oklahoma, Pennsylvania, Montana, New Hampshire, Delaware, and Nebraska. □





## Meat science made practical

Ever had to alter a pattern or blueprint? Take a tuck here and there, redraw some lines—hey, it fits!

That's the way it was in Iowa with the scholarly sounding topic of meat science. A group of Extension specialists at Iowa State University and in the seven-county Cedar Rapids area have done some translating.

Their recipe? Take two college-level courses in meat science. Condense the content into ten 2-hour sessions for middle management of a meat packing company and for home economists. Then do a further condensed 1-day consumer version for homemakers. Finally, plan a new batch for restaurateurs and others who deal in quantity cookery.

"Adapt" is sort of a middle name for the Extension Service. College kids have certain needs, but foremen at a packing plant or home economists from the power company have others.

According to Eldon Hans, area Extension livestock specialist, "The college courses were condensed into 10 sessions because we can assume some practical experience—meat cutting, buying, and so on—on the part of this audience. They just needed some updating on the scientific part."

The series of professional level lessons on meat evolved from sessions on quantity cookery for schools and churches held earlier in the same area. Because of the high interest in meat, a special short course was planned.

The course included sessions on topics like the physical and chemical structure of meat, the microbiology of meat, meat animal carcass composition, market grades for meat and meat products, buying on specifica-

tion, meat processing and preservation, as well as inspection and sanitation.

When news of the sessions got out, there were enough additional requests to warrant a repeat of the course. "Participants are still calling in to ask for copies of material used," said Hans.

The school included the "students" in planning phases. The course outline was sketched out by representatives from a meat market, a hospital, and a packing plant, as well as State Extension Meat Specialist Bob Rust, and Hans.

As proof of its professionalism, the course was approved for accreditation by the American Dietetic Association.

"Method of instruction was geared to the needs of the on-the-job professionals, too," Rust commented. A lot of visuals, like overhead transparencies and slides, were used.

Not just one professor, but a wide range of experts taught the course; they talked on the subjects they work with daily—meat inspection, muscle chemistry research, production.

Topics were immediately practical. The dietitians, for example, could use on the job the next day the information on such things as differences in meats and causes of off-flavors.

In addition to lectures, the instructors used the demonstration method to reinforce points—nitrates and nitrites in hot dogs, hamburger mixing to avoid over-binding of the protein, different casings for sausage, and the like.

Tests? "Not for these folks. They were beyond that," Hans said. "They're experienced already and were highly motivated."

The 10 lessons were an educational bargain at \$15 per participant. It was an elite affair of almost engraved invitation caliber. The planning group recommended their coworkers, and these people got personal invitations.

"It was geared to a specific audience, so this was the best way to publicize it," Hans added.

"The meat packers said the course made them more aware of how much their work affects the appearance and quality of the products consumers buy," Rust said.

Next the Extension folks translated their messages again to fit the language and day-to-day concerns of the family grocery shopper. Subject matter, lesson presentation, and time were altered.

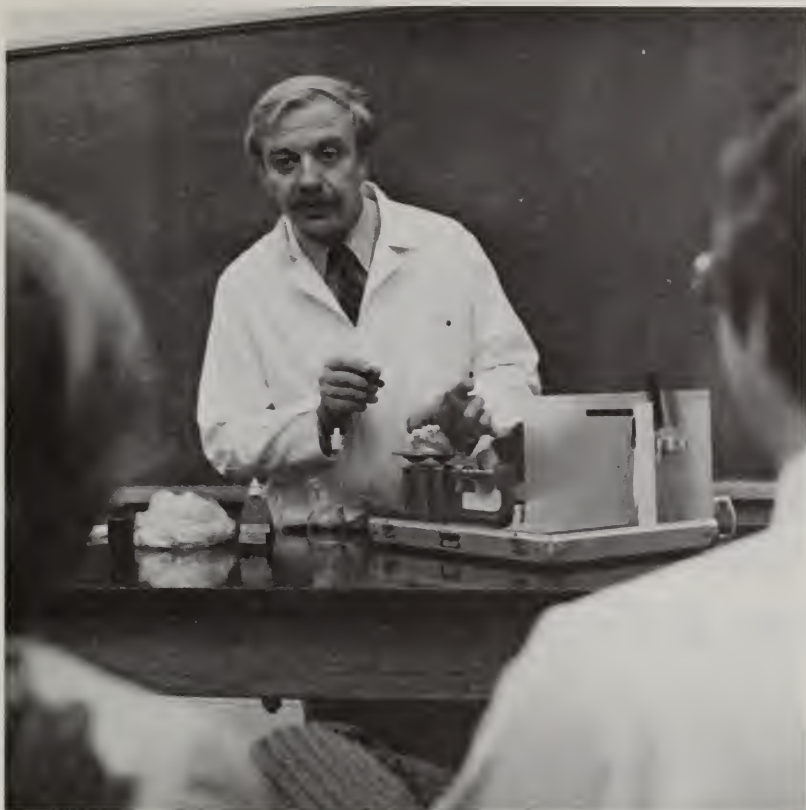
One-day "Meet the Meats" sessions in each of the seven counties drew 378 consumers. This time the mass media were used to reach the larger audience—direct mail fliers, newsletters, and television.

Here the emphasis was on meat's place in the diet and dietary requirements. "Timing couldn't have been better," said Hans. "Meat prices were going up and the home economists were getting requests for meat stretchers and low-cost meals."

The county home economist was the head teacher. Then came practical talk on palatability of meat—tenderness, juiciness, flavor—as well as meat grades and buying tips from the livestock production specialists.

As a finale, Charlotte Young, Extension consumer and management specialist for the area, pointed out the advantages of buying meat on sale and buying larger cuts of meat to trim down at home.





*Bob Rust, Extension meat specialist, shows participants in a meat science short course how to do a fat analysis test on ground meat.*

Ah, but the proof came in the tasting! The homemaker-consumers were treated to a luncheon of meat dishes and were given the recipes.

And the kids in school weren't forgotten, either. Their lunchroom cooks, along with people from restaurants, nursing homes, and hospitals sat in on a 1-day clinic on meat cookery in quantity.

The Extension institution management specialist gave tips on menu planning; Rust discussed cutting, buying, and handling meats; and a man from the Department of Social Services gave the word on meat preparation.

"A secret to success in each case was involving audience representatives in the planning," revealed Hans. "We gave them an idea of what was available through Extension and what we could do, then got their reaction to what would be most relevant to them.

"It pays to get their views on tim-



*Eldon Hans, livestock production specialist, tells Charlotte Young, consumer specialist (left), and Susan Uthoff, Extension home economist, about the effect of marbling on meat tenderness.*

ing, format, and schedules, too. We also got a chance to meet key people in certain jobs in the community."

Meat is still a big topic of conversation around the dinner table, over the meat counter, in the packing houses, and in restaurant and institution kitchens. Extension passed easily understood, up-to-date information to the places in the Cedar Rapids area where it could be used best. □

by  
E. J. Hauser  
Robert J. Mullen,  
and  
Melvin Gagnon  
*University of California\**



## River rafts open new world to 4-H'ers

Camping, combined with river rafting and exploring, has southern California 4-H members and leaders discovering more of the natural environmental learning resources in their own home territory.

They are discovering more teamwork, too; this kind of project won't work without it.

The principle involved is looking toward those natural resources in your own area around which 4-H activities can be developed or combined.

In our case, the organizing element is the Colorado River along the California - Arizona border. Between Blythe, California, to just north of Yuma, Arizona, the river flows gently for 55 miles through semi-isolated desert-mountain country. It's ideal for a 3-day, fun-filled outing.

---

*\*E. J. Hauser, 4-H youth advisor, Imperial County; Robert J. Mullen, farm advisor, San Diego County; Melvin Gagnon, Extension communications specialist, University of California at Davis.*

Last spring and early summer, two group trips were organized, involving 35 rafts and nearly 400 members and leaders from San Diego, Imperial, and Riverside Counties. The first trip, held the previous year, had 10 rafts and 75 participants.

Rafting through this quiet desert provides a different dimension. The raft is transportation into—and more vitally, out of—the wilderness. It is a tightly crowded “home” for the 8 to 10 persons aboard.

It takes work to keep it moving, people pitching in to select and set up shore camps each day, and someone to do the cooking and cleanup.

Regardless of how many other rafts are around, each becomes an island of interaction for its own particular group. And because that bobbing cork has such an important role, the success of the trip hinges on the teamwork that develops, starting with the planning and building of the raft itself.

As put by Lewis Hayes, a volunteer leader from the Fallbrook 4-H Club, “It takes working together. There's no room for goof-offs and

those who don't pull their weight get left at home—or thrown overboard.”

Two boys were, in fact, sent home because they wouldn't “pull their weight” in camp chores and paddling. That decision was made by one of the raft groups, not by the trip organizers.

Sound drastic? No, our kids were out to enjoy this trip. They seemed to discover pleasure in creating the smoothest-running operation because it left them more time for the fun they'd come for.

“Seeing the achievement of the kids provided me the greatest satisfaction of the whole trip,” said Joe Nierodzinski, leader for the Jamul Chaparrons.

“The club started with an idea and carried it off. Our members examined various alternatives for building a raft with different materials, weighed the costs of each, and made their decisions. They had to learn some new techniques for working with the plastic foam and resin that they selected for their basic flotation.”

Each member of his group of eight put up \$5 for materials and invested



*Loaded with supplies and manned by well-coordinated crews, the rafts, left, proceed at a leisurely pace down the Colorado River. Below, one of the 35 craft designed and built by the 4-H'ers awaits its turn to be launched on its adventures.*



several weekends of labor in construction. Members put in another \$5 each for expenses, including "hot chow three times a day," that necessarily also called for shared investments in camp jobs.

4-H member Terri Nierodzinski told of another kind of sharing. "Some kids know different things about plant life or the geology of the desert. We could talk about what we were seeing, and learn from each other. One girl used to live in this country, and we stopped and she led us on a search for pumice stone. We didn't find any, but it was fun looking and we saw things we'd otherwise have missed."

Most significantly, the members and their chaperones adhered to the basic purpose: they planned a raft, gathered supplies, transported themselves and their rafts, in some cases 100 to 200 miles, and worked together to get that raft downriver. They shared the work and fun of a true camping experience.

Rafting at a mile or two per hour is an almost drastic change of pace for many, especially those from the busier cities. But it's a good one. You can't be in a hurry.

Like it or not, you're forced to look at the scenery, because it moves by slowly. Pretty soon you can begin to see the appreciation that develops in these kids for this different way to discover the out-of-doors.

Success of our venture can be traced to several essentials.

**Planning:** A general meeting has to be held several months in advance for interested groups to consider and plan for the trip. We provide raft designs as a guide, but encourage individual ideas. Each group must name a raft captain and chaperone or leader; authority is needed to insure safety of the group.

**Organization:** members must work out construction assignments, finances, meals, and cooking chores. Supplies must be purchased and packed. Supplies must include containers for carrying drinking water, oars for paddling, rope for lifelines, and of course, life jackets.

**Construction:** consideration must be given to ease of handling, transportation, and assembly at the river launch site. The raft should have a sunshade and must have a storage box for food and camping gear.

Each raft should be tested in a swimming pool or nearby body of water under weight equal to that of the group and gear that it must carry. Organizers must have the right to reject unsafe rafts.

**Transportation:** each group is responsible for getting its raft and crew to the river; many have been able to do this with a single truck.

All groups should assemble by a given hour, preferably the evening before, so vehicles can be shuttled to the trip's end-point. The shuttle eliminates tiresome delays at the trip's end waiting for transportation when most are tired and want to load up and go home.

The trip's organizers must check well in advance with marina or boat landing authorities at both ends to insure use of particular areas.

**Embarkation:** trip starts should be near a scheduled hour so rafts can stay reasonably close together.

We strongly urge the use of accompanying power boats. They can scout campsites and the river ahead, herd the stragglers, or be available to handle emergencies or injury. Their motors should be strong enough to pull a raft, if necessary.

We encourage rafts to carry small motors to keep them off the riverbank and out of side channels.

Power boats add a big plus in keeping the group from scattering over isolated camp spots. After all, it's important that the rafters have opportunity to gather in the evening to share the day's experiences.

For many from widely separated clubs at home, this is an opportunity to get acquainted. It seems a shame to travel several hundred miles together to make this trip and still pass each other on the river as strangers.

River rafting, then, for us has provided the complete outdoor experience. It teaches appreciation for nature's beauty and builds cooperation and fellowship among the participants. No one comes home without a feeling of accomplishment. □





# The fuel and the spark

Two of the most basic needs of a motor are fuel and a firing mechanism (spark). In these days of the energy crisis, we are concerned about efficient use of both.

The human body has similar needs. Its "fuel," of course, is food. Its "spark" is the function which motivates a person to make proper use of that food. Let's call it knowledge, or education. We are in a sort of crisis in satisfying these two needs efficiently, also.

Cooperative Extension was founded with these two basic needs in mind. It was established at a time when agriculture was struggling to provide the food and fiber to support a rapidly developing Nation. And its congressional founders recognized the necessity for a program to provide more assistance in utilizing that food and fiber.

Thus, the Smith-Lever Act called for nationwide educational services in agriculture and home economics, with a youth program related to both. This article deals primarily with the home economics phase of those services, and more specifically with the recently adopted Expanded Food and Nutrition Education Program.

EFNEP, as it has come to be called, has produced an added "spark," or motivation, to the home economics program, and, in fact, to the entire Extension function.

Started just about 5 years ago with an initial grant of \$10 million, Extension's nutrition education program has accomplished much in improving the health of America's low-income families. It has brought a new vigor to education at the grassroots of our society.

In those 5 years, the Cooperative Extension Service, through the States and the Federal Government, has employed about 20,000 nutrition program aides to help teach low-income homemakers how to feed their families better. The program aides have had about the same experience with poverty as have the nearly one million homemakers they have reached. They have empathy for their disadvantaged neighbors and an understanding of what they need.

This one-to-one method of teaching always has been a basic part of Extension's educational repertoire. It has proved particularly effective in the Expanded Food and Nutrition Education Program.

EFNEP has touched the heartstrings of America, and has vibrated throughout the Nation. After seeing initial

results of the program, Congress has appropriated about \$50 million a year as a Federal contribution to the work in the States, and the States have responded in supplementing that support with their own funds and expertise.

The program actually resulted from a pilot project started in Alabama nearly 10 years ago. Today, aides across the Nation use every teaching method available to reach homemakers of various cultures with these messages for better nutrition. They are helping their neighbors catch up in nutrition knowledge with their more prosperous counterparts.

These aides also are lending a hand to poor families by advising them of the Food Stamp Program and availability of donated foods. They show the homemakers how to make the best use of their food stamp dollars as they shop for groceries.

The Cooperative Extension Service has scheduled a workshop for May 1974 to help evaluate the first 5 years of EFNEP and to determine what course it should follow in the years ahead. This will be an excellent opportunity not only to take stock of the program's resources and benefits, but also to tell the public about them.

Continuing evaluation has been one of the strong points of the nutrition education program. Studies by both Government and commercial researchers have helped to guide the program through its various stages. One of the principal measures of its success has been the extent that homemakers and their families have adjusted their diets toward more nutritional foods and a good balance.

I salute the Home Economics Staffs of Cooperative Extension, and particularly the nutrition leaders, for the remarkable success they have achieved in helping poor families to live better. It is one of Extension's inspiring accomplishments.

I am confident that American agriculture, with the constant help of Cooperative Extension, will continue to provide adequate "body fuel" for our Nation's 210 million people, and for millions more in other countries. And I am equally confident that Extension's home economists, nutrition leaders, and program aides will continue to provide much of the "spark" that will guide our people toward better health and better living.—Walter John